



Patent
Attorney's Docket No. 1015290-000508

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of) **MAIL STOP AF**
Paul K. Shufflebotham et al.) Group Art Unit: 1763
Application No.: 09/775,664) Examiner: RUDY ZERVIGON
Filed: February 5, 2001) Confirmation No.: 9320
For: INDUCTIVELY COUPLED PLASMA)
CVD)
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants request review of the final rejection of Claims 72-79, 81-91, 93 and 94 set forth in the final Office Action dated March 15, 2007. A Notice of Appeal is submitted herewith. No amendments are being filed with this Request.

Rejections Set Forth in Final Official Action

Claims 72, 78, 79, 81 and 83 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,556,501 to Collins et al. ("Collins"); Claim 84 was rejected under 35 U.S.C. § 103(a) to Collins in view of U.S. Patent No. 5,691,876 to Chen et al. ("Chen"); Claims 85-91 and 93 were rejected under 35 U.S.C. § 103(a) to Collins in view of Chen and Latz; and Claim 94 was rejected under 35 U.S.C. § 103(a) to Collins in view of U.S. Patent No. 5,571,366 to Ishii et al. ("Ishii").

Rejection of Claims 72, 78, 79, 81 and 83 Under 35 U.S.C. §102(b)

The Office contends that Collins anticipates the subject matter recited in Claims 72, 78, 79, 81 and 83. Applicants disagree. M.P.E.P. § 2131 states "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Collins does not disclose every feature of any one of Claims 72, 78, 79, 81 and 83.

Claim 72 recites an inductively coupled plasma CVD processing system comprising, *inter alia*, a planar dielectric window forming a top wall of the plasma processing chamber; a substantially planar electrically-conductive coil extending across the planar dielectric window, which inductively couples RF energy into the plasma processing chamber through the planar dielectric window and energizes the process gas into a plasma state; a substrate support mounted in the chamber below the dielectric window and having a support surface facing the dielectric window, the support surface lying in a plane parallel to the planar dielectric window; and a plurality of injector tubes (emphasis added).

First, Collins does not disclose a "planar dielectric window" as recited in Claim 72. The planar dielectric window is comprised of a dielectric material. As shown in Figure 1, Collins' plasma reactor comprises a dome 17 including a cylindrical wall 17W of a dielectric material and a cover or top 17T typically of aluminum or anodized aluminum (column 7, lines 32-36); and a Faraday shield 45 surrounding the cylindrical wall 17W. The Faraday shield 45 can be single- or double-walled (Figures 15A, 15B) and has field surfaces 46, 47, 48 extending around the antenna (column 15, lines 3-23). The Faraday shield is electrically conductive (column 15, line 19).

The Office asserts that Collins' field surfaces 46, 47, 48 correspond to the claimed "planar dielectric window." However, these field surfaces are part of the Faraday shield 45, but are not a "planar dielectric window." Collins' cylindrical wall 17W is not a "planar dielectric window," and it is a side wall, not a top wall, of the reactor. Collins does not disclose a "planar dielectric window" as recited in Claim 72. Also, Collins' top 17T (i.e., top wall), which is not a dielectric window, forms the top wall of the Collins' reactor.

Second, Collins does not disclose a substantially planar electrically-conductive coil extending across a planar dielectric window. In contrast, Collins' reactor includes a helical, multiple-turn antenna 30, which is not a planar coil, surrounding the cylindrical wall 17W. See Figure 1.

Third, Collins does not disclose "a substrate support mounted in the chamber below the dielectric window and having a support surface facing the dielectric window, the support surface ... lying in a plane parallel to the planar dielectric window" (emphasis added). The Office asserts that Collins' "dielectric window 46-

48" includes a lower horizontal surface parallel to a "support surface" (i.e., interface 5/32). Collins' field surfaces 46, 47, 48 are not a "planar dielectric window," and the alleged "lower horizontal surface" faces the top surface of the wall 17W, not a support surface of a substrate support.

Fourth, Collins does not disclose a plurality of injector tubes, as recited in Claim 72. The Office asserts that Collins discloses injector tubes 54. Collins "injector tubes 54" are actually sintered ceramic porous gas diffuser plugs 54 inserted in holes to prevent hollow cathode discharge (column 10, lines 8-11). The diffuser plugs 54 are not gas injector tubes, as this term would be understood by one skilled in the art.

Thus, Claim 72 and dependent Claims 78, 79, 81 and 83 are not anticipated by Collins. Therefore, the rejection should be withdrawn.

Rejection of Claims 73-77 and 82 Under 35 U.S.C. § 103(a)

Claim 73, 74, 76, 77 and 82 depend from Claim 72. The combination of Collins and Latz does not disclose or suggest every feature recited in any one of Claims 73, 74, 76 and 77.

Latz does not disclose the above-discussed missing features of Collins in regard to Claim 72. That is, Latz does not disclose: (a) a planar dielectric window forming a top wall of a plasma processing chamber; (b) a substantially planar electrically-conductive coil extending across the planar dielectric window; (c) a substrate support mounted in the chamber below the dielectric window and having a support surface facing the dielectric window; or (d) a plurality of injector tubes.

The Office asserts that Latz teaches "injector tubes (nozzle portion of 24/24a)." Official Action at page 8, last paragraph. Latz discloses distributing lines 24, 24a (paragraph bridging columns 2 to 3, Figure 1), but provides no disclosure of the alleged injector tubes.

Thus, even if the teachings of Latz and Collins were combined, the combined teachings would still not disclose or suggest every feature of Claim 72. As set forth in M.P.E.P. § 2143.03, however, "to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art" (citation omitted). Therefore, Claims 73, 74, 76, 77 and 82, which depend from Claim 72, are patentable over the applied references.

Independent Claim 75 recites an inductively coupled plasma CVD processing system comprising, *inter alia*, a planar dielectric window forming a top wall of the plasma processing chamber; a substantially planar electrically-conductive coil extending across the planar dielectric window; a substrate support having a support surface facing the dielectric window, the support surface lying in a plane parallel to the planar dielectric window; and a plurality of injector tubes (emphasis added). For reasons discussed above, the combination of Collins and Latz does not disclose or suggest every feature of Claim 75, which is patentable over these references.

Therefore, the rejection of Claims 73-77 and 82 should be withdrawn.

Rejection of Claim 84 Under 35 U.S.C. § 103(a)

Claim 84 depends from Claim 72. The combination of Collins and Chen does not disclose or suggest the combination of features recited in Claim 84.

The Office asserts that Chen discloses the features of Claim 84. However, Chen does not disclose the above-discussed missing features of Collins in regard to Claim 72. Particularly, Chen discloses an electrostatic chuck, but does not disclose: (a) a planar dielectric window forming a top wall of a plasma processing chamber; (b) a substantially planar electrically-conductive coil extending across the planar dielectric window; (c) a substrate support mounted in the chamber below the dielectric window and having a support surface facing the dielectric window; or (d) a plurality of injector tubes.

Thus, the combined teachings of Latz and Chen do not disclose or suggest multiple features of Claim 84. Therefore, Claim 84 is patentable over the applied references and the rejection should be withdrawn.

Rejection of Claims 85-91 and 93 Under 35 U.S.C. § 103(a)

The combination of Collins in view of Chen and Latz does not disclose or suggest the combination of features recited in Claims 85-91 and 93.

Independent Claim 85 recites an inductively coupled plasma CVD processing system comprising, *inter alia*, a planar dielectric window forming a top wall of the plasma processing chamber; a substantially planar electrically-conductive coil extending across the planar dielectric window; a substrate support having a support surface facing the dielectric window, the support surface lying in a plane parallel to the planar dielectric window; and a plurality of injector tubes (emphasis added). For

reasons discussed above, the combination of Collins, Chen and Latz does not disclose or suggest every feature of Claim 85. Accordingly, Claim 85 is patentable over this combination of references.

Thus, Claims 86-91 and 93, which depend from Claim 85, are patentable over the applied references for at least the same reasons as those for which Claim 85 is patentable. Therefore, the rejection of Claims 85-91 and 93 should be withdrawn.

Rejection of Claim 94 Under 35 U.S.C. § 103(a)

Claim 94 depends from Claim 72. The combination of Collins and Ishii does not disclose or suggest the combination of features recited in Claim 94.

The Office asserts that Ishii discloses the features of Claim 94. However, Ishii does not disclose the above-discussed missing features of Collins in regard to Claim 72. Particularly, Ishii discloses a plasma processing apparatus, but does not disclose: (a) a substrate support mounted in the chamber below the dielectric window and having a support surface facing the dielectric window; or (b) a plurality of injector tubes.

Thus, the combined teachings of Collins and Ishii do not disclose or suggest multiple features of Claim 94. Therefore, Claim 94 is patentable over the applied references and the rejection should be withdrawn.

Conclusion

Therefore, allowance of the application is respectfully requested.

Respectfully submitted,

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